PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Yoshinobu UTSUMI, et al.

Docket No: Q76496

Appln. No.: 10/620,701

Group Art Unit: 2834

Confirmation No.: 9300

Examiner: Iraj A. MOHANDESI

Filed: July 17, 2003

For: ROTATING ELECTRIC MACHINE AND METHOD AND DEVICE FOR POSITIONING ROTATIONAL POSITION SENSOR FOR THE MACHINE

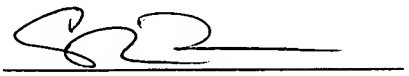
SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



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WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: January 31, 2006

Attorney Docket No.: Q76496

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Mitsubishi Denki Kabushiki Kaisha. Assignment of the application was submitted in U.S. Patent and Trademark Office on July 17, 2003, and recorded on the same date at Reel 014307, Frame 0576.

II. RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 are all of the claims pending in the application with claims 1-3, 12 and 13 withdrawn from consideration as being directed to non-elected inventions. Claims 4-7 and 9 are rejected and claims 8, 10 and 11 are objected to but would be allowable if rewritten in independent form. All of the claims are set forth in the attached Appendix.

IV. STATUS OF AMENDMENTS

No amendments were requested subsequent to the Office Action of June 29, 2005. The Request for Reconsideration filed August 8, 2005 is believed to be of record.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claims 4, 5 and 7 are directed to "[a] method for positioning a rotational position sensor for a rotating electric machine, [wherein] the rotational position sensor compris[es] a stator coil wound around a stator; a rotor having ... a signal rotor fixed to a rotation axis thereof; and a detection stator, disposed opposite to the signal rotor, for detecting the rotational position of the rotor". Claim 4 recites that the rotor includes a magnetic pole. Claim 5 recites that rotor includes a magnetic pole with a field coil. Claim 7 recites that the rotor includes a magnetic pole composed of a permanent magnet. (Figs. 1 and 6; specification at page 8, line 12 - page 13, line 24, and page 18, line 3 -page 19, line 7).

Claim 4 recites:

> constraining the rotor from rotating by energizing the stator coil;
> detecting the rotor to be rotated by at least a predetermined angle; and
> adjusting the position of the detection stator or the signal rotor so that the detection stator outputs a predetermined signal.

Claim 5 and 7 recite similar limitations.

The rotating electric machine is provided with the adjuster for adjusting the position of the signal rotor 19 or the detection stator 21 by energizing the stator coil 13 to rotate the rotor 3 by a predetermined angle or more and constrain it. (page 11, lines 15-19). In particular, as shown in Fig. 3A and 3B which illustrate an exemplary embodiment of the invention, a sensor core 22 includes teeth 22a and long holes 22b, wherein detection stator 21 is fixed by inserting an adjusting screw 23 through the long hole 22b and tightening it against a rear bracket 8. (page

9, lines 16-24). The stator coil is energized by supplying a direct current to the stator coil so that the rotor is constrained from rotating. Then, a direct current is supplied to the stator coil so that the rotor is rotated by a predetermined angle with an electromagnetic force, and electrically constrained at a predetermined position with respect to the stator. The rotation of the rotor by the predetermined angle is detected on the basis of a signal from the detection stator. In this state, the long hole of the detection stator is rotated in a rotation direction referring to a monitor so that the signal from the detection stator may have a predetermined value, and the adjusting screw is tightened. (specification at page 9, line 25 - page 9, line 17).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 4-7 and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Shimizu (U.S. Patent No. 6,373,155).

VII. ARGUMENT

It is respectfully submitted that claims 4-7 and 9 would not have been anticipated by or rendered obvious in view of Shimizu for at least the following reasons.

In the May 6, 2005 Office Action, the Examiner generally cites Fig. 1, column 3, lines 19, 21 and 48-62 for disclosing all of the features of independent claims 4, 5 and 7. However, the Examiner's rejection does not address last two steps of "detecting the rotor to be rotated by a predetermined angle or more; and adjusting the position of the detection stator or the signal rotor so that the detection stator may have a predetermined signal."

Shimizu discloses a dynamotor which includes a motor rotor 28, a motor stator 30 and a rotational displacement detection mechanism (sensor) 58. The rotational displacement detection mechanism 58 includes a sensor rotor 60 and a sensor stator (coil) 62 in order to detect-rotational displacement of the motor rotor 28 relative to the motor stator 30. In an inner circumferential side of the sensor rotor 60, four key-ways (or slots) 70 are formed and are disposed circumferentially at even intervals from one another. The sensor rotor 60 is positioned on a rotor mounting part 32 mounted on a crankshaft 12 by means of a radially oriented first dowel 72. The sensor stator 62 of the rotational displacement detection mechanism 58 and a magnetic-proof plate 74 (which shields magnetic flux and/or radio wave noise which leak from the motor stator 30) are installed in a motor case 22 by means of a mounting bolt 76. The sensor stator 62 is positioned by means of a second axially oriented dowel 78.

Appellant respectfully submits that it is quite clear that Shimizu does not teach or suggest any of the claimed steps of:

> constraining the rotor from rotating by energizing the stator coil;
> detecting the rotor to be rotated by a predetermined angle or more; and
> adjusting the position of the detection stator or the signal rotor so that the detection stator may have a predetermined signal.

Although the Examiner cites column 3, lines 48-62 of Shimizu for allegedly disclosing "constraining the rotor from rotating by energizing the stator coil", the cited portion of Shimizu only discloses the structure of the rotational displacement sensor and does not even mention constraining the rotor.

Further, nowhere does Shimizu disclose or suggest detecting the rotor to be rotated by a predetermined angle or more. Instead, Shimizu simply discloses that the dynamotor includes the rotational displacement detection mechanism without mentioning any particular operations which are performed by the rotational displacement detection mechanism.

Moreover, Shimizu does not teach or suggest that the position of the rotational position sensor may be adjusted. Instead, Shimizu simply discloses that the sensor rotor 60 and the sensor stator 62 are positioned by the first dowel 72 and the second dowel 78, respectively. In fact, Shimizu teaches that the relative positions of the dynamotor 26 and the rotational displacement detection mechanism 58 remain constant such that positioning of each of the components is unnecessary.[1] Thus, Shimizu does not teach or suggest adjusting the position of

[1] See Shimizu at column 5, lines 5-17.

the detection stator or the signal rotor so that the detection stator may have a predetermined signal.

In the October 31, 2005 Advisory Action, the Examiner's only response to Appellant's arguments for patentability is that Shimizu "teaches a sensor stator coil 62 and a sensor rotor 60 is positioned on the rotor." However, the Examiner's response does not address any of the specific steps recited in the claims. Further, the claims do not simply require positioning a sensor stator coil and sensor rotor on a rotor. Instead, the claims require, in part, "adjusting the position of the detection stator or the signal rotor so that the detection stator may have a predetermined signal".

Accordingly, Appellant respectfully submits that independent claims 4, 5 and 7, as well as dependent claims 6 and 9, should be allowable because Shimizu does not teach or suggest positioning a rotational position sensor by performing any of the claimed steps. Therefore, reconsideration and reversal of the Examiner's position to the contrary is respectfully requested.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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CLAIMS APPENDIX

CLAIMS 1-13 ON APPEAL:

1. (Withdrawn) A rotating electric machine comprising:

a stator;

a stator coil wound around the stator;

a rotor;

a magnetic pole and a signal rotor fixed to the rotor;

a detection stator disposed opposite to the signal rotor, for detecting the rotational position of the rotor; and

an adjuster for adjusting the position of the signal rotor or the detection stator by energizing the stator coil to rotate the rotor by a predetermined angle or more and constrain the rotator.

2. (Withdrawn) A rotating electric machine comprising:

a stator;

a stator coil wound around the stator;

a rotor;

a magnetic pole and a signal rotor fixed to the rotor;

a detection stator disposed opposite to the signal rotor, for detecting the rotational position of the rotor; and

a controller for controlling energizing the stator coil on the basis of a detection result of the detection stator;

wherein the controller generates a correction value by comparing the detection result from the detection stator and the beforehand stored detection data, and the controller controls energizing the stator coil on the basis of the correction value, when the rotor is rotated by a predetermined angle or more and constrained by energizing the stator coil.

3. (Withdrawn) The rotating electric machine according to claim 1,

wherein the rotor is rotated by the predetermined angle or more by supplying a direct current to a predetermined phase of the stator coil and then a direct current to a different phase from the predetermined phase.

4. (Previously Presented) A method for positioning a rotational position sensor for a rotating electric machine which comprises a stator including a stator coil, and a rotor including a magnetic pole wherein the rotational position sensor comprises a signal rotor fixed to a rotation axis of the rotor, and a detection stator, disposed opposite to the signal rotor, for detecting the rotational position of the rotor, the method comprising:

constraining the rotor from rotating by energizing the stator coil;

detecting the rotor to be rotated by at least a predetermined angle; and

adjusting the position of the detection stator or the signal rotor so that the detection stator outputs a predetermined signal.

5. (Previously Presented) A method for positioning a rotational position sensor for a rotating electric machine which comprises a stator including a stator coil, and a rotor including a magnetic pole iron core and a field coil, wherein the rotational position sensor comprises a signal rotor fixed to a rotation axis of the rotor, and a detection stator, disposed opposite the signal rotor, for detecting the rotational position of the rotor, the method comprising:

fixing the magnetic pole iron core and the signal rotor in a predetermined positional relation in a rotational direction;

constraining the rotor from rotating by energizing the stator coil and the field coil;

detecting the rotor to be rotated by at least a predetermined angle; and

adjusting the position of the detection stator so that the detection stator may have a predetermined signal.

6. (Previously Presented) The method for positioning a rotational position sensor for a rotating electric machine according to claim 5,

wherein the magnetic pole iron core is a claw pole.

7. (Previously Presented) A method for positioning a rotational position sensor for a rotating electric machine which comprises a stator including a stator coil, and a rotor including a magnetic pole composed of a permanent magnet, wherein the rotational position sensor comprises a signal rotor fixed to a rotation axis of the rotor, and a detection stator disposed

opposite to the signal rotor, for detecting the rotational position of the rotor, the method comprising:

fixing the magnetic pole and the signal rotor in a predetermined positional relation in a rotational direction;

constraining the rotor from rotating by energizing the stator coil;

detecting the rotor to be rotated by at least a predetermined angle; and

adjusting the position of the detection stator so that the detection stator outputs a predetermined signal.

8. (Previously Presented) The method for positioning the rotational position sensor for the rotating electric machine according to claim 4,

wherein the step of constraining the rotor from rotating by energizing the stator coil includes rotating the rotor by the predetermined angle by supplying a direct current to a predetermined phase of the stator coil and then a direct current to a different phase from the predetermined phase, and constraining the rotor from rotating.

9. (Previously Presented) The method for positioning the rotational position sensor for the rotating electric machine according to claim 4,

wherein the rotational position sensor is a resolver.

10. (Previously Presented) The method for positioning the rotational position sensor for the rotating electric machine according to claim 9,

wherein the rotational position sensor is a resolver of one phase excitation and two phase output, wherein the position of the detection stator or the signal rotor is adjusted so that one of the output signals may be zero.

11. (Previously Presented) The method for positioning the rotational position sensor for the rotating electric machine according to claim 9,

wherein the rotating electric machine has n pole pairs,

and wherein the position of the detection stator or the signal rotor is adjusted so that the average value of n outputs from the detection stator may be zero, when the rotor is constrained at n positions from rotating by energizing the stator.

12. (Withdrawn) A device for positioning a rotational position sensor for a rotating electric machine, the rotational position sensor comprising: a stator coil wound around a stator; a rotor having a magnetic pole iron core with a field coil and a signal rotor fixed to a rotation axis thereof; and a detection stator, disposed opposite to the signal rotor, for detecting the rotational position of the rotor, the device comprising:

a fixing unit for fixing the magnetic pole iron core and the signal rotor in a predetermined positional relation in a rotational direction;

a constraining unit for constraining the rotor from rotating by energizing the stator coil and the field coil;

a detector for detecting the rotor to be rotated by a predetermined angle or more; and

an adjuster for adjusting the position of the detection stator so that the detection stator may have a predetermined signal.

13. (Withdrawn) A device for positioning a rotational position sensor for a rotating electric machine, the rotational position sensor comprising: a stator coil wound around a stator; a rotor having a magnetic pole composed of a permanent magnet and a signal rotor fixed to a rotation axis thereof; and a detection stator disposed opposite to the signal rotor, for detecting the rotational position of the rotor, the device comprising:

a fixing unit for fixing the magnetic pole and the signal rotor in a predetermined positional relation in a rotational direction;

a constraining unit for constraining the rotor from rotating by energizing the stator coil;

a detector for detecting the rotor to be rotated by a predetermined angle or more; and

an adjuster for adjusting the position of the detection stator so that the detection stator may have a predetermined signal.

EVIDENCE APPENDIX:

There has been no evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other similar evidence.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.